1: Krasheninnikov N-5 (1736-40) 1764 Kamchadal

boil it with their fiſh, and uſe the leaves as tea; but the greateſt uſe is made of its pith, which, after having ſplit the ſtalks, they ſcrape out with ſhells, and, tied up in bundles, dry it in the ſun. It is then very pleaſant, and in taſte reſembles dried *Perſian* cucumbers. The *Kamtſchadales* uſe it in ſeveral diſhes, and ſerve it up green as a deſert. The kipri boiled gives a thick ſweet wort, that makes the beſt quaſſe * imaginable: it alſo affords them a very ſtrong vinegar, if to ſix pounds of the kipri they add a pound of the ſweet herb of ſphondilium, and ferment it in the uſual way: they get a great deal more brandy, when they uſe the infuſion of the kipri, inſtead of water, to prepare the ſweet herb for diſtillation.

They cure the navels of their children with this herb, chewing it, and laying it upon the part. They grind the roots and ſtalks, and uſe them inſtead of green tea, to which the flavour has ſome reſemblance. The ſame uſe the *Kuriles* make of another ſhrub †, which has flowers like the ſtrawberry, only yellow, and produces no berries. This is called *Kuriſkoy* tea, and has great virtue in fluxes and gripes.

The wild garlick ‖ is not only uſeful in the kitchen, but alſo in medicine. Both the *Ruſſians* and *Kamtſchadales* gather great quantities, which they cut and dry in the ſun for their winter proviſion; at which time boiling it in water they ferment it a little, and uſe it as an herb ſoup, which they call *ſhami*. They eſteem the wild garlick ſo efficacious a remedy againſt the ſcurvy, that they think themſelves in no danger ſo ſoon as it begins to

* Quaſſe is a *Ruſſian* drink made of rye-malt, and flower, and very little fermented. Sometimes they add mint to it, and it makes no diſagreeable drink.

† Potentilla caule *fruticoſa*. LINN. Cliff.

‖ Allium foliis radicalibus petiolatis floribus umbellatis. GMEL. flor. Sib. tom. 1. p. 49.

ſhew

1: Krasheninnikov N-5 (1736-40) 1764 Kamchadal

ſhew itſelf under the ſnow: and I have heard an extraordinary account of its virtues from the Coſſacks that were employed with captain *Spanberg* in building the ſloop Gabriel: they were ſo ill with the ſcurvy, that ſcarce any were able to work, or even to walk, ſo long as the ground was covered with ſnow; but as ſoon as the high lands began to appear green, and the wild garlick to ſprout out, the Coſſacks fed upon it greedily. Upon their firſt eating it, they were covered over with ſcabs in ſuch a manner, that the captain believed they were all infected with the venereal diſeaſe. In about a fortnight, theſe ſcabs fell off, and they were perfectly recovered of the ſcurvy.

We muſt reckon amongſt the food of the *Kamtſchadales* the ſhelmina *, and the morkovai †, which is the ſtalk of a plant that is hollow and juicy, ſuch as the angelica. The ſhelmina is a ſpecies of the ulmaria. Its root is blackiſh without, and white within: it ſends out from one root two or three ſtalks about a man's height; which, near the root, are about a finger thick, but above, ſomewhat thinner. The leaves ſhoot out from long branches which grow all over the ſtalk. Their upper part is green and ſmooth; and their lower rough, with high reddiſh veins. Where the branch ſprings from the root there are two leaves like thoſe above deſcribed, but ſomewhat leſs. The ſtalk is triangular, reddiſh, hard, and rough. At the top of the plant is a flower reſembling that of the ſervice-tree. It has four oval piſtils, flattened in the ſides, with downy edges; in each of which are contained two longiſh ſeeds. They are ſurrounded by ten white ſtamina, riſing above the flower; the anthera being likewiſe white. It flowers about the middle of *July*, and the ſeeds are ripe about the middle of *Auguſt*. The root, ſtalks, and

* Ulmaria fructibus hiſpidis. STELLER. † Chærœptrylum ſeminibus leviſbus nitidis, petiolis ramiferis ſimplicibus. LINN. Cliff. p. 101.

1: Krasheninnikov N-5 (1736-40) 1764 Kamchadal

137 278 Amongſt the medicinal plants we muſt mention the following: 1ſt, Kailoun, a plant which grows in all the ſwamps near the rivers. The inhabitants uſe this as a cataplaſm in all boils to make them ſuppurate; and taken in decoctions, they imagine it produces ſweat, and drives away every infectious humour. 2dly, The tchaban *, which grows in plenty through all *Kamtſchatka*, they uſe in decoctions for all pains and ſwellings of the legs. 3dly, Katunatch †, or wild roſemary, is not ſo ſtrong as in other parts. The inhabitants have thought it beneficial in the venereal diſeaſe, but in this are deceived. 4thly, The ſea oak ‖ is thrown out by the waves; and being boiled with the ſweet herb, a decoction of it is given in fluxes. 5thly, The ſea raſberry is given to women in labour, to promote the birth. 6thly, There is yet another ſea plant, called yachanga ‡, which the ſea throws out near to the *Kurilſkaya Lopatka*, reſembling the whale's beard. This the inhabitants uſe in cholic pains, infuſing it in cold water. 7thly, The omeg **, or water hemlock, grows upon all the rivers, and almoſt all the ſhore of 757 *Kamtſchatka*. This plant is made uſe of againſt pains in the back in the following manner:---They put the patient into a hut made exceedingly warm; and when he begins to ſweat profuſely, they rub his back with the cicuta, being careful not to touch the loins, for, what is very extraordinary, that would occaſion ſudden death: however from this practice they 137 278 411 generally obtain great relief. 8thly, The zgate †† muſt not be omitted, whoſe dreadful qualities are but too well known in all this part of the world. They anoint the points of their darts and arrows with the juice which is ſqueezed from the

* Dryas. LINN.
† Andromeda foliis ovatis venoſis.
‖ Quercus marina. CLUS. et LOB.
‡ Species fuci.
** Cicuta aquatica.
†† Anemonoides et ranunculus.

root

The women, as was mentioned above, who deſire to have children, for this purpoſe eat ſpiders. Some child-bed women, that they may the ſooner conceive again, eat the navel-ſtring of the child. There are others who have as great averſion to having children, and procure abortions by different poiſonous medicines, in which they are aſſiſted by ſome knowing old women; but this can never be done, as it is well known, but at the hazard of their own lives. There are others, who are ſuch unnatural wretches as to deſtroy their children when they are born, or throw them alive to the dogs. They uſe likewiſe ſeveral herbs and different conjurations to prevent conception. Their ſuperſtition, alſo, is ſometimes the occaſion of great barbarity; for when a woman bears twins, one of them at leaſt muſt be deſtroyed, and ſo muſt a child born in very ſtormy weather; though the laſt can be averted by ſome conjurations. After the birth, the women, to recover their ſtrength, make uſe of fiſh broth, made with an herb which they call *bale*; and then in a few days return to their ordinary diet.

CHAP. XVIII.

Of their DISEASES *and* REMEDIES.

THE principal diſeaſes in *Kamtſchatka* are the ſcurvy, boils, palſy, cancer, jaundice, and the venereal diſtemper. Theſe diſeaſes they think are inflicted upon them by the ſpirits that inhabit ſome particular groves, if ignorantly they happen to cut any of them down. Their principal medicines conſiſt in charms and conjurations, but at the ſame time they do not neglect the uſe of herbs and roots. For the ſcurvy they uſe a certain

1: Krasheninnikov N-5 (1736-40) 1764 Kamchadal

757 certain herb which they rub upon their gums, as alſo the leaves of the cranberry * and blackberry †. The Coſſacks cure themſelves with decoctions of the tops of cedar, and by eating wild garlick. The good effects of this medicine were felt by all the people that were in the *Kamtſchatka* expedition.

164 757 Boils are a moſt dangerous diſeaſe in *Kamtſchatka*, cauſing the death of numbers. They are very large, being often two and ſometimes three inches over; and when they break they open in about forty or fifty little holes. It is looked upon to be a very dangerous caſe, when no matter comes from theſe openings; and thoſe that recover are confined to their beds, ſometimes ſix and ſometimes ten weeks. The *Kamtſchadales* uſe raw hare-ſkins to bring the matter to a ſuppuration. The palſy, cancer, and *French* diſeaſe, are ſuppoſed to be incurable; the laſt, they ſay, was not heard of before the arrival of the *Ruſſians*. There is likewiſe another diſtemper which they call *ſuſhutch*, which is a ſort of ſcab, that ſurrounds the whole body under the ribs like a girdle. When this does not come to ſuppurate and fall off, then it is mortal, and, they ſay, every one muſt have this once in his lifetime, as we have the ſmall-pox. Mr. *Steller* gives a more ample account of their diſeaſes and remedies. He relates, that they uſe with ſucceſs the ſponge for drawing out the matter in theſe boils. The Coſſacks apply to their boils the remains of the ſweet-graſs ‖ after they have extracted their brandy, and this often ſucceſsfully reſolves them.

757 844 278 The women uſe ſea raſberries ‡ to haſten their delivery; and alſo a ſort of coral, which they make into powder like crab-eyes, in a gonorrhea. Againſt coſtiveneſs they uſe the fat of the ſea wolf; in gripes, pains of the bowels, and colds, they uſe a

* Vaccinium ramis filiformibus repentibus, foliis ovatis perennantibus.
† Impetrum. ‖ Spondylium foliolis pinnatifidis. ‡ Species fuci.

decoction

1: Krasheninnikov N-5 (1736-40) 1764 Kamchadal

decoction of the pentaphylladis fruticoſus, and that not without ſucceſs. To wounds they apply the bark of the cedar, and with this they pretend they can even extract arrows.

In coſtiveneſs they likewiſe drink the broth of their ſtinking fiſh, and in fluxes they eat lac lunæ, which is very common in this country. For the ſame diſtemper they likewiſe uſe meadow-ſweet and tormentilla root.

Thoſe who have ſore throats uſe a decoction of the epilobium, which is alſo uſed by women in hard labours. When they are bit by a dog, or wolf, they lay the bruiſed leaves of the ulmaria upon the wound, drinking at the ſame time a decoction of them: this decoction they alſo adminiſter in the belly-ach and ſcurvy. The leaves and ſtalks bruiſed they uſe in burns. The decoction of this herb mixed with fiſh they uſe alſo in the tooth-ach; they hold it warm in their mouths, and lay a piece of the root upon the affected tooth. They uſe a ſpecies of gentian in the ſcurvy, and almoſt againſt every diſorder. In the *French* diſeaſe they apply the chamaenchododendros, but ſeldom to any advantage: in fluxes they uſe the quercus marina: in ſwellings of the legs and ſcurvy, they drink a decoction of the dryas; and procure ſleep by eating the ſeed of the ephedra. They foment their eyes with a decoction of ſeramus.

The inhabitants of the *Lopatka* uſe clyſters, which probably they learned from the *Kuriles*: they prepare them from a decoction of different herbs, ſometimes with fat and ſometimes without: this they put into a ſeal's bladder, faſtening to it any pipe which they can procure, and apply it in the common way: this medicine is in high eſteem among them, and uſed in moſt diſtempers.

In the jaundice, they have a medicine, which they look upon as infallible. They take the roots of the iris ſylveſtris, and after cleaning them, beat them in warm water, and apply the juice, which they ſqueeze out, as a clyſter, continuing it for

1: Krasheninnikov N-5 (1736-40) 1764 Kamchadal

757 278 two days three times a day: this produces a purging, and generally gives great relief. After ſome time, if the cure is not completed, they repeat it again. They neither uſe lancets nor cupping glaſſes, but with a pair of wooden pincers draw up the ſkin, and pierce it with an inſtrument of chryſtal made on purpoſe, letting out as much blood as they want.

In pains of the back they rub the part affected before a fire with a root of the cicuta, being careful not to touch the joins, which they ſay would produce ſpaſms. In pains of the joints they place upon the part a little pyramid, made of a fungus which grows upon the birch-trees, and ſet the top of it on fire, letting it burn 'till it comes to the ſkin, which then cracks, and leaves a wound behind that yields a great quantity of matter. The wound they cure with aſhes of the fungus, but ſome give themſelves no trouble about it at all. The root of the anemonides, or ranunculus, they uſe to hurt or poiſon their enemies; and they likewiſe poiſon their arrows with it.

CHAP. XIX.

Of the BURIAL *of the* DEAD.

764 775 THE burial of the dead, if one can call throwing them to the dogs a burial, is different here from what it is in any other part of the world; for inſtead of burning or laying the dead bodies in ſome hole, the *Kamtſchadales* bind a ſtrap round the neck of the corps, draw it out of the hut, and deliver it for food to their dogs: for which they give the following reaſons; that thoſe who are eaten by dogs will drive with fine dogs in the other world; and that they throw them round near

5: Jochelson A-5 (1910-11) 1928 Kamchadal

consisted of myself, Mrs. Jochelson as assistant and physician to the party, and eleven laborers, of whom seven were Russians, three Kamchadals and one Japanese.

The Osernaya River, with its slanting bed, rocky banks, rapid falls and curves, forms a most difficult and dangerous route of travel. We had two boats and two canoes. One of the boats was for Mrs. Jochelson and myself; the other carried the tents, instruments, food and other supplies. The canoes served for reconnaissance and errands requiring despatch. It was very difficult to make progress on the turbulent river, particularly on the way up. Several times we had to disembark and carry our freight on our shoulders, while the boats were pulled by ropes through the rapids. (See Plate 5, figs. B, C.)

While there are no human habitations anywhere in the country, we were amazed to find well-beaten paths in the forests and on the mountains above the river, as if there were numerous human settlements. But realizing that these were roadways made by bears, we walked cautiously amid the dense vegetation with rifles ready for action. We did not see any bears while following these paths, but we heard the breaking and cracking of bushes and tree branches, and on the ground we found pieces of fresh salmon, the remnants of the bears' meals. The animals are very nervous and easily become alarmed. They have sufficient reason to be afraid of a man with a gun.

It is well known that at Lake Kuril and in its vicinity scores of bears are to be found. The abundance of fish and of many kinds of berries furnishes them ample food and favors their increase in number. The sparsity of human population is also favorable to the multiplication of the bears, although the few hunters of the coastal villages annually kill them by the hundreds.

After five days of painful effort we finally reached our destination. It was a windy day and our frail boats nearly capsized on the stormy lake, which is surrounded by the peaks of extinct volcanoes and by steaming hot sulphurous springs, the temperature of which reaches 100° C. (210° F.) and more. From our boat we observed steaming springs on the banks of the Osernaya when nearing the lake, but we had no time to stop to investigate them. We were told that the Kamchadal from Yavino and the Russians from Osernaya dig pits by the hot springs for bathing and curing different diseases. The temperature in these baths is reduced to 50° or 40° C.

From the head of the Osernaya River I directed my fleet to the Siwusk Cape (see map of Kuril Lake and Plate 5, fig. A). While excavating there we were entertained every day by the sight of bears fishing and gathering berries, particularly when we increased our field of observation by the use of opera glasses. The bears stood with their hind legs in the mountain rivers and creeks, and with their front paws managed to throw out on the banks the sea salmon, which in order to spawn ascend the rivulets that flow into the lake. The bears went after their prey and eating off the heads and spines, which are the most palatable parts of the fish, cast away the remainder. Their movements, turning, leaping and jumping, were so amusing that we could not restrain our laughter.

5: Jochelson A-5 (1910-11) 1928 Kamchadal

342 According to Krasheninnikoff the ancient Kamchadal had still another kind of summer dwelling, the superterrene grass lodge called bashabash. Unfortunately he does not state its shape—whether it was of a conical or hemispherical type. The bashabash was put up at the fishing places near the dwellings on piles and served chiefly as a place for cooking, which could not be done on the wooden platforms of the pile-dwellings.

R61 White clay, pieces of which were found in some of the excavations, was
• 757 eaten by the Kamchadal, according to Krasheninnikoff (II, p. 180), as a remedy
171 for diarrhœa. Bogoras relates (*The Chukchee*, p. 200) that the reindeer Chukchee, the Koryak and Lamut in Kamchatka, occasionally use as food a kind of white clay called by them nute-ecen (earth-fat). The Kamchadal called the white clay "earth sour cream." Sternberg tells (*The Gilyak*, p. 17) of a Gilyak favorite dish for treating guests, called moss, which consists of a mixture of the gluey broth of fish skins, seal's fat, berries, rice, and sometimes of minced dried fish, to which the solution of white clay is added.

It must be noted that the use of some kinds of clay as food is not limited to Siberia alone. The eating of edible clay has been observed among certain Guiana Indians,[1] Carib and Antillean islanders,[2] and among the people of Georgia and the Carolinas.[3] Deniker refers to many other places where the habit of eating certain earthy substances—kaolin, clay, limestone—has been observed. He calls this habit *Geophagy* and explains it by the need of supplying the needed mineral substances (calcareous or alkaline salts).[4]

[1] W. E. Roth, *An Introductory Study of the Arts, Craft and Customs of the Guiana Indians*, Annual Report of the Bureau of American Ethnology, 1924).
[2] William Sheldon, *Brief Account of the Caribs who Inhabited the Antilles*, Transactions of the American Antiquarian Society, I, 1820, pp. 365–435).
[3] Charlotte D. Gower, *The Northern and Southern Affiliations of Antillean Culture*, Memoirs of the American Anthropological Association, Number 35, 1927, p. 26.
[4] J. Deniker, *The Races of Man*, London, 1900, p. 145.

7:Lesseps T-3 (1787-88)1790 Kamchadal

177 The various conſtructions which M.
515 Kaſloff ordered for the greater convenience
757 of his eſtabliſhment, detained us two days
823 longer. Animated by a love of virtue and humanity, he enjoyed the pleaſure of having procured theſe ſalutary and pleaſant baths for his poor Kamtſchadales. The uninformed ſtate of their minds, or perhaps their indolence, would, without his ſuccour, have deprived them of this benefit, notwithſtanding their extreme confidence in theſe hot ſprings for the cure of a variety of dif-
312 eaſes*. This made M. Kaſloff deſirous of aſcertaining the properties of theſe waters; we agreed to analyſe them, by means of a proceſs which had been given him for this purpoſe. But before I ſpeak of the reſult of our experiments, it is neceſſary to tranſcribe the proceſs, in order the better to trace the mode we adopted.

* Formerly they dared not approach theſe ſprings, or any volcano, from the idea that they were the abode of evil ſpirits.

Water

[The Governor-General of Okhotsk and Kamchatka--Analyst]

7:Lesseps T-3 (1787-88)1790 Kamchadal

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The ſmall pox, whoſe ravages I have already mentioned, appears not to be natural to the country, nor is it very common. Since the invaſion of the Ruſſians, and the frequent emigrations that ſucceeded it, this epidemical diſeaſe has only made its appearance in 1767 and 1768. It was then brought into the country by a Ruſſian veſſel bound to the Eaſtern iſlands, for the purpoſe of hunting otters, foxes, and other animals. The perſon, who had in his blood the fatal germ, was a ſailor from Okotſk, where he had taken remedies for the diſorder, previous to his departure; but the recent marks of it were viſible. Scarcely landed, he communicated this cruel malady to the poor Kamtſchadales, which carried off three fourths of them. As it has not appeared ſince, it is ſuppoſed that theſe people are not ſubject to it. In the year 1790 it broke out in the northern part of Kamtſchatka, but it did not ſpread ſo far as the peninſula.

7:Lesseps T-3 (1787-88)1790 Kamchadal

164 peninſula. It began at Anadirſkoi; it is
278 not known how it was brought there,
757 though the Ruſſians are alſo accuſed in this inſtance.

There is reaſon to ſuſpect that the Kamtſchadales are indebted to them in like manner for their knowledge of the venereal diſeaſe, which happily is not common. This peſtilence appears to be exotic, and its cure is as difficult as it is rare. They have recourſe to various roots and to corroſive ſublimate, which is attended in this country with its uſual ruinous effects, and the more ſo, as being indiſcreetly adminiſtered.

732 The Kamtſchadales have no deformed births. Such as are deformed among them, have become ſo in conſequence of a conſiderable fall, though this is not a very common occurrence, as they are accuſtomed to fall from their balagans. They are but

7: Lesseps T-3 (1787-88) 1790 Kamchadal

They are but

164 little ſubject to the ſcurvy; their uſe of
757 wild garlic, and various fruits and berries, is a preſervative. The Ruſſians and other ſettlers are more frequently afflicted with this diſeaſe.

Conſumptions are frequent enough; but boils, tumors, abſceſſes, and wens, are very common. They have no mode of curing them, but by inciſion or extirpation; and they uſe for theſe operations a knife, or perhaps ſimply a ſharp ſtone, which ſupplies the place of a lancet. Such inſtruments are calculated to impreſs us with no very high opinion of the ſkill of the operators; and it is obvious that the art of ſurgery, brought to ſuch perfection with us, is in a ſtate of the utmoſt barbariſm at Kamtſchatka.

178 Phyſic does not appear to have made a
756 greater progreſs; though it muſt be confeſſed

22: Guillemard T-2 (1882) 1886 Kamchadal

133 between the hills, rises the snowy cone of Koriatska; and the store-
361 house of the Alaska Commercial Company, painted the dull Indian
103 red that is so favourite a shade throughout Sweden, forms a
609 pleasing patch of colour in the foreground. It did not take us long to make acquaintance with Petropaulovsky, in spite of its imposing name. The inhabitants, we found, called it Petropaulsk, and, in short, showed every disposition to make things easy for their visitors. Salmon and bilberries were sent off to us, and, on our remarking upon the presence of cows, a supply of cream and
441 butter was not long in following. Society here is limited, the
643 Europeans being but eight or ten in number. Mr. Lugobil, the
563 local head of the Alaska Commercial Company, resides here, and
712 superintends the shipping of the sealskins from Bering and Copper
R Islands; as does Captain Hunter, the cheery agent of Phillippeus
177 and Company, another firm of fur-traders. Of stores (the American
.64 term is in use here) there are but two. One of them was owned by a kindly old Swede, who also acted in the capacity of Mayor. He had not visited his native land for thirty years, and it was evidently a source of the keenest pleasure to him to talk of it to one of us who knew it, and loved it almost as much as he did himself. The town is now no longer a military post, and the barracks and fortifications, razed to the ground by the English in 1855, have never been rebuilt. The entire authority is vested in the Ispravnik, whom, in spite of the exigencies of his profession, we did not find averse to the seductions of trade. A Russo-American Jew, better known as the King of Kamschatka, of whom the Russian Government was extremely anxious to get rid, completed, with Dr. Dybowski, the list of Europeans of the sterner sex. The ladies were only four in number.

757 With Dr. Dybowski, who has acquired a European fame as a
115 naturalist, it was a pleasure to make acquaintance. His life had
R been an eventful one. Imprisoned in Siberia for some time for taking
177 part in the Polish insurrection, he had eventually been pardoned
.75 and made government doctor of Kamschatka, in which capacity he

22: Guillemard T-2 (1882) 1886 Kamchadal

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had visited the greater part of the peninsula. Owing to the difficulties of communication excepting in the winter season, he had abundant time on his hands, which he had devoted with indefatigable ardour to his favourite pursuits. Geology, surveying, palæontology, photography and ornithology,—each and all had occupied his leisure hours, with results which were evidenced by the richness of his collections. None of the other Europeans knew anything of the country outside Petropaulovsky, and to him alone we were indebted for what information we could get about our projected route, as well as for many useful hints on Kamschatkan travel.

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Our intention was, if the plan were feasible, to travel northwards from Avatcha Bay until we struck the head waters of the Great Kamschatka River, where we were to procure canoes if possible, or if not to construct rafts, and by this means float down the stream to the sea. Meanwhile, the yacht was to remain in Petropaulovsky harbour for a month or six weeks, and then proceed to the mouth of the river to await our arrival. We found that Dr. Dybowski, in spite of his extensive travels in the peninsula, had not himself performed this journey, neither was he aware of any other person who had attempted it. Communication often takes place with Nischni Kamschatka—an *ostrog* near the mouth of the river—in the winter, but the sledges do not, as in Lapland, travel on the river; and though occasionally a few of the lonely settlements upon its banks are passed, the track leads for the most part by short cuts overland, and we had no means of judging the

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distances or the length of time necessary for our journey. From Dr. Dybowski, however, we were able to obtain all the information that was to be got upon the subject; and to learn that, whatever other difficulties we might have to encounter, that of an insufficient supply of food was certainly not one. His accounts of the really marvellous abundance of fish, which at the time seemed almost incredible, we were destined later to find, if anything, understated. Whether the almost exclusive fish diet of the inhabitants of the

22: Guillemard T-2 (1882) 1886 Kamchadal

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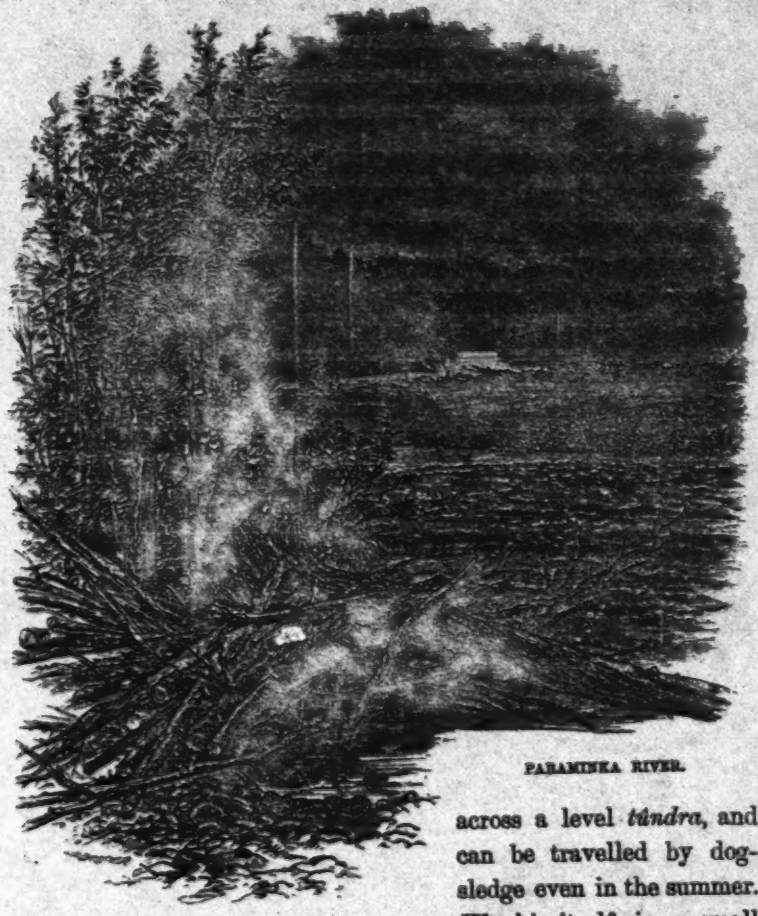
picturesque lake, across which we were conveyed in dug-out canoes to a small village on the opposite shore. From here the road lies



PARAMINKA RIVER.

across a level *tundra*, and can be travelled by dog-sledge even in the summer. Kluchi itself is a small village composed of a few log-built huts and balagans, but, with its background of the Vilutchinska volcano, is prettily situated. It stands in an open valley, in which some attempts at cultivation are made. The hot springs—the steam from which is visible at some

22: Guillemard T-2 (1882) 1886 Kamchadal

133 distance—have a temperature of about 108° Fahr., and appear to be
515 nearly devoid of sulphur. They are much resorted to by the natives
757 for cutaneous and other disorders, and have huts built over them for bathing purposes, thanks to the orders of the Ispravnik. Near the village runs a branch of the Avatcha River, down which our party paddled to the sea; and on arriving at the yacht we were pleased to learn that most of the horses had been brought into the settlement, and that there was every prospect of our starting on our long-planned expedition through the interior in the course of a couple of days.

22: Guillemard T-2 (1882) 1886 Kamchadal

of them were clothed in leather breeches and the boots I have already described, with the ordinary loose blue shirt of the Russian peasant, but some had already commenced to wear the *parka*. These are not all of reindeer, which is not a common animal except among the Koriaks, but are also made of bear and dog fur, although the dogs are not grown for the purpose, as is the case in Lapland.

If leprosy be in any way connected with a diet in which fish is one of the chief constituents, as is by some supposed to be the case, in no country in the world should it be more prevalent than in Kamschatka. Dr. Dybowski had assured me that it was very common, and had shown me photographs in which the expression of the disorder appeared identical with that unfortunately so frequent in Norway. But the only case which came under our notice was at this place, and since the sufferers do not appear to be secluded in any way, it is only fair to conclude that, in the interior of the country at least, the disease cannot be very prevalent. Syphilis is, unhappily, very general, but its effects are now far less terrible than on its first introduction.

We paddled merrily down stream in spite of the still unsettled arguments as to the price we were to pay our men. Below Mashura the pines become more numerous, and the perpendicular mud cliffs are a characteristic feature of the river. Beneath these we found the depth of the stream to be often as much as eighteen or twenty feet, but the mean depth is probably not more than half as great. Huge piles of driftwood block the banks of every low promontory, and testify to the enormous force and volume of the stream upon the breaking up of the ice,—a phenomenon which can dimly be realised from the wonderfully graphic description of Mr. Seebohm in his "Siberia in Asia." Owing to the increased depth of the water, snags became less frequent and navigation easier; but the size of our rafts prevented us from making more than five versts an hour, a rate that our log, frequently heaved and with corrections applied for the current, told us to be fairly constant.

Hitherto we had been able with the greatest ease to shoot as

24: Lansdell--635-636 M-2 (1879) 1882 Kamchadal
116, 133, 757

"About 50 miles west of Petropavlovsk is a remarkable warm spring, into which when you enter, says Mr. Collins, the sensation is as if the skin would be [636] removed, whilst the stones and mud on the bottom fairly burn the feet, added to which the steam and gas, ascending from this natural caldron, fairly take away the breath. In a short time, however, bathers become red like lobsters, and find the temparature enjoyable. The water is very buoyant. It is used by the natives for all sorts of deseases."

27: Sauer--304-305 T-2 (1789-93) 1802 Kamchadal
116, 133, 757

"At the distance of 12 versts from the village of Paratounca, in a direction north-west, is the discharge of a deep rivulet of warm water, called Klutshevoia, navigable for canoes three versts up-[305]wards. It springs from several hot water lakes in an extensive plain; one of which lakes is about 100 fathoms long, and 7 fathoms wide; very convenient for bathing near the shore, but the middle very deep, and extremely hot. About 20 fathoms from this is another, about 5 fathoms by 7, but excessively hot: a body of boiling water issues through a square hole in a stone at the eastern extremity; and it has a run into a cold water spring, so narrow, that you may stand with one foot in each. Ulcers, old and fresh wounds, are reputed to heal from bathing in this water. I used it for tea, but the flavour was not very agreeable, being something like that of alum. The hot springs of Shumatshik are situated 90 versts north of the bay of Avatsha, and flow into Kronotskoi Bay. There are several others, but of no note."